

## Isolation and Characterization of *Campylobacter jejuni* Isolates Obtained from Asymptomatic Human Volunteers

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**Background:** *Campylobacter jejuni* is the foremost cause of bacterial gastroenteritis in the United States. It is also demonstrating increased resistance to antibiotics, especially the fluoroquinolones. In Maryland, the incidence of gastrointestinal disease due to *C. jejuni* (6.8 cases/100,000 population) is significantly less than that caused by *Salmonella* (17.7 cases/100,000 population). In order to ascertain if there is an asymptomatic state for *Campylobacter* that might contribute to the decreased incidence of symptomatic disease, the Centers for Disease Control and Prevention's Foodborne Disease Active Surveillance Network's (FoodNet) University of Maryland site analyzed fecal specimens from healthy human volunteers.

**Methods:** Stool specimens were collected from Maryland residents who had not experienced a significant episode of diarrhea nor had taken antibiotics in the six months prior to specimen donation. Specimens were processed by adding an aliquot of stool into 5 ml of *Campylobacter* enrichment broth. Following a 48 hr incubation at 42°C, an aliquot of the enrichment culture was transferred to a *Campylobacter* blood agar plate and incubated an additional 48hr at 42°C in a microaerophilic environment. Colonies were identified as *C. jejuni* if they were Gram negative rods, grew at 42°C on the selective media, were both oxidase and catalase positive, and hydrolyzed both hippurate and indoxyl acetate.

**Results:** Stools from 27 of the 222 asymptomatic volunteers (12.2%) yielded colonies that were identified as *C. jejuni*. Six of these asymptomatic isolates, along with 12 clinical isolates obtained from hospitalized patients, were analyzed for the presence of two putative virulence genes using the polymerase chain reaction. None of the asymptomatic isolates were positive for the presence of cytolethal distending toxin (CDT) genes, while 8/12 clinical isolates contained CDT genes. In vitro, CDT induces cell cycle arrest at the G2 phase and ultimately cell death. In addition, the CiaB gene (associated with secretion of bacterial virulence factors) was not amplified in any of the asymptomatic isolates but was amplified in 11/12 clinical isolates.

**Conclusion:** *C. jejuni* may be found in the gastrointestinal tract of individuals who do not have overt signs of disease nor a recent history of significant diarrheal illness. Currently the remaining asymptomatic isolates are undergoing analysis for the presence of CDT, CiaB and other putative virulence genes. Functional cell invasion assays and antibiotic susceptibility tests are also being performed to better characterize the differences between isolates that cause clinical disease and those that do not.

### Suggested citation:

Torpey D, Golden N<sup>1</sup>, Hawkins M, Ruark J, Acheson D, FRCP, and Morris J. Isolation and Characterization of *Campylobacter jejuni* Isolates Obtained from Asymptomatic Human Volunteers. International Conference on Emerging Infectious Diseases. Atlanta, GA, March 2002.